REMARKS

Claims 1-5, 7-21, and 23-27 are pending in the case, claims 6 and 22 having been canceled above. The Office Action objected to claims 10-13, 25 and 26 and rejected each of claims 1-27 on various grounds. More particularly, the Office Action rejected:

- claims 10-13, 25 and 26 under 35 U.S.C. § 112, ¶2, as indefinite for referring to a canceled claims;
- claims 1, 4-17, and 20-27 as anticipated under 35 U.S.C. §102(b) by U.S. Letters Patent 5,359,575 ("Williams");
- claims 2-3 and 18-19 as obvious under 35 U.S.C. §103(a) over Williams in combination with "Radar/Sonar Acceleration Estimation with Linear Period Modulated Waveforms" by R. A. Altes ("Altes") and "Own Doppler Nullification (ODN) in Sonars Using Linear Period Modulated (LPM) Wideband Signals" by Ashley, et al. ("Ashley").

Applicants traverse each of the rejections.

I. INFORMALITIES

The Office still did not take a position on the acceptability of the drawings. Applicants therefore presume that the drawings are acceptable.

II. RESPONSE TO SUBSTANTIVE MATTERS

Applicants traverse each of the rejections.

A. CLAIMS 1, 4-17 AND 20-27 ARE NOVEL OVER WILLIAMS

The Office rejected claims 1, 4-17 and 20-27 as anticipated under 35 U.S.C. §102(e) by U.S. Letters Patent 5,359,575 ("Williams"). Applicants previously argued that the rejections suffer from two flaws. First, the Office has failed to properly establish *prima facie* anticipation for some of the dependent claims. Second, Williams does not teach all the limitations of the claims.

"[I]t is incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference." *Ex parte Levy*, 17 U.S.P.Q.2d (BNA) 1461, 1462 (Pat. & Tm. Off. Bd. Pat. App. & Int. 1990). With respect to claims 4-16 and 20-27, the entire rejection is:

> Dependent claims 4-16 and 20-27 are further anticipated by the structure and method disclosed by Williams et al.

(Detailed Action, p. 2, ¶3) The Office still has failed to remedy this defect in the *prima facie* case. The Office maintains that all limitations have been "mapped", however this is mistaken. For example, the Office has not mapped anything about orthogonal Doppler invariant signals, Maximal sequences, or Kasami sequences such as are recited in various ones of claims 7-10.

An anticipating reference, by definition, must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. M.P.E.P. § 2131; *In re Bond*, 15 U.S.P.Q.2d (BNA) 1566, 1567 (Fed. Cir. 1990). Each of the independent claims 1 and 17 now recite "a plurality of separable, modulated Doppler invariant signals". The remaining claims incorporate this limitation as a matter of law by virtue of their dependence. 35 U.S.C. §112, ¶4.

The Office now identifies col. 3, lines 64-68 as disclosing "separable, modulated Doppler invariant signals". This passage reads:

> A transmitter portion of the transceiver synthesizes a pulse waveform having preselected characteristics on one of five channels between 50 kHz and 100 kHz. The synthesized pulse is transmitted into the water at a scheduled time through the transducer for reception by one or more of the transceivers.

Thus, the signals described here are "separated"—*i.e.*, separated in time—rather than "separable". In fact, they are separated in time *because* they are not separable. Compare, for example, the discussion of "separable" in Applicants' disclosure in ¶[0031]:

> Referring back to FIGS. 1A-B and 2A-B, the source 110 and/or the transceivers 210 may generate a plurality of modulated Doppler invariant acoustic signals 130, 215. *In one embodiment, the plurality of modulated Doppler invariant signals 130, 215 are separable*. For example, each of the plurality of modulated Doppler invariant acoustic signals 130, 215 may be modulated by a sequence to form an orthogonal Doppler invariant acoustic signal 130, 215, which may be transmitted and/or received while other orthogonal Doppler invariant acoustic signals 130, 215 are also

> being transmitted and/or received. ***In particular, the plurality of orthogonal Doppler invariant acoustic signals 130, 215 may be transmitted and/or received simultaneously***.

(emphasis added) There is no indication anywhere in Williams that the transmitted signals are separable, only that they are separated.

Accordingly, the rejections therefore fail on two independent grounds. Not only has the Office failed to properly establish *prima facie* anticipation, but it the cited reference fails to teach all the limitations of the claims. Applicants therefore request that the rejections be withdrawn.

B. CLAIMS 2-3, AND 18-19 ARE UNOBVIOUS OVER WILLIAMS IN COMBINATION WITH EITHER ALTES OR ASHLEY

The Office rejected claims 2-3 and 18-19 as obvious under 35 U.S.C. §103(a) over U.S. Letters Patent 5,359,575 ("Williams") in combination with "Radar/Sonar Acceleration Estimation with Linear Period Modulated Waveforms" by R. A. Altes ("Altes") and "Own Doppler Nullification (ODN) in Sonars Using Linear Period Modulated (LPM) Wideband Signals" by Ashley, et al. ("Ashley"). Applicants previously argued that these rejections fail because (1) the combinations do not teach all the limitations of the claims, and (2) the secondary references are outside the scope and content of the prior art, which also means that the references are not properly combinable.

Whether Williams in fact teaches "a plurality of separable, modulated Doppler invariant signals" is addressed above.

The Office disputes Applicants' position that Altes and Ashley are outside the scope and content of the prior art. The Office more particularly states:

> It is difficult to see how a sonar application is outside the scope and content of underwater pulse tracking (Williams et al). In fact the secondary references and Williams are directed acoustic pulse transmissions or sonar.

(Detailed Action, p. 4) The Office makes a common mistake by defining too broadly the problem facing the inventor while doing the same for the cited art and then erroneously pegs the relevance of the secondary references to the primary reference instead of the claimed invention.

As previously noted, a reference can be asserted against the claimed invention under §103 only if (1) it is within *Applicant's* field of endeavor, or (2) is reasonably pertinent to the

problem facing the *Applicant* even though not within *Applicant's* field of endeavor. *In re Clay*, 23 U.S.P.Q.2d (BNA) 1058, 1060 (Fed. Cir. 1992). Thus, the relevance of Altes and Ashley to Williams is immaterial.

Furthermore, by arguing their relevance, the Office impliedly concedes the proposition that the secondary references are not within Applicants' field of endeavor. The Office does not challenge this proposition, at any rate.

But the Office errs in defining the problem confronting Applicants too broadly. As previously asserted, the present invention as claimed is directed to determining the position of survey components during deployment of a seismic survey through acoustic ranging. The Office apparently now asserts the problem to be much broader—namely, "acoustic pulse transmission". Under this definition, the generation of sonic booms by exceeding the sound barrier would ostensibly be "reasonably pertinent" to the present invention. This is clearly not the case, but highlights the error that can arise from defining the Applicants' problem too broadly.

This error is frequently seen in decisions of the Court of Appeals for the Federal Circuit, its predecessor, of the Board of Patent Appeals and Interferences. *See, inter alia*, *Clay*, 23 U.S.P.Q.2d (BNA) at 1060; *In re Pagliero*, 210 U.S.P.Q. (BNA) 888 (CCPA 1981); *Ex parte Dussaud*, 7 U.S.P.Q.2d (BNA) 1818, 1819 (Bd.Pat.App.Int. 1988). These kinds of decisions also illustrate the error that can arise from defining the problem too broadly based on the underlying technical principles.

Applicants point to the decision in *In re Pagliero*, 210 U.S.P.Q. (BNA) 888 (CCPA 1981). In *Pagliero*, the Applicant claimed a "method for producing a decaffeinated vegetable material." *Id.*, at 888. One of the secondary references taught a "lipoid theory" of narcotics. *Id.*, at 889-90. As a part of that theory, the secondary reference taught that caffeine is soluble in fatty materials. *Id.*, at 891. The Board thus held that the claimed decaffeinated vegetable material was obvious. *Id.*

The Board construed the relevant art broadly as "decaffeination" processes. Id. In addressing whether the secondary reference was analogous, the court stated that:

> Our determination here is not without difficulty. However, we think the difficulty arises from not considering the subject matter as a whole and instead focusing on the scientific principle involved....

Id. at 892, quoting *In re Van Wanderham*, 154 U.S.P.Q. (BNA) 20, 25 (1967).

The court's decision in Clay is also instructive. In addressing the first part of the test for analogous art, the Federal Circuit reasoned:

> The PTO argues that [the reference] and [Applicant's] inventions are part of a common endeavor—"maximizing withdrawal of petroleum stored in petroleum reservoirs." However, [the reference] cannot be considered to be within [Applicant's] field of endeavor merely because both relate to the petroleum industry. ...[Applicant's] field of endeavor is the *storage* of refined liquid hydrocarbons. The field of endeavor of the [reference], on the other hand, is the *extraction* of crude petroleum. The Board clearly erred in considering [the reference] to be within the same field of endeavor as [Applicant's].

Clay, 23 U.S.P.Q.2d (BNA) at 1060. This reasoning reads directly on the present case with only slight modification for the technologies involved. With respect to the second part of the test, the Federal Circuit, after a discussion of the two inventions, held:

> A person having ordinary skill in the art would not reasonably have expected to solve the problem of dead volume in tanks for storing refined petroleum by considering a reference dealing with plugging underground formation anomalies. The Board's finding to the contrary is clearly erroneous.

Clay, 23 U.S.P.Q.2d (BNA) at 1061.

Thus, the Office's error lies in equating the problem confronting the inventors with the underlying scientific principle—*i.e.*, acoustic pulse transmission rather than determining the position of survey components during deployment of a seismic survey through acoustic ranging. As in *Clay*, *Pagliero*, and *Dussaud*, this has led to the consideration of art that is outside the scope and content of the prior. The Office's difficulty in seeing that Altes and Ashley are not relevant arises from the fact that it has framed the analysis improperly. Once the analysis is properly structured, the error in the Office's position becomes clear.

Applicants therefore respectfully submit that the rejections are erroneous. The art of record does not teach all the limitations of the claims, and therefore cannot render the claims obvious. M.P.E.P. § 706.02(j); *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). The secondary references are outside the scope and content of the prior art such that they are not properly citable against the present claims. *In re Clay*, 23 U.S.P.Q.2d (BNA) 1058, 1060 (Fed. Cir. 1992). Applicants therefore request that the rejections be withdrawn.

III. CONCLUDING REMARKS

Applicants therefore respectfully submit that the claims are in condition for allowance, and requests that they be allowed to issue. The Examiner is invited to contact the undersigned attorney at (713) 934-4053 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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